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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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INTERNATIONAL BUSINESS MACHINES CORPORATION

DEPT. 18G

BLDG. 300-482

2070 ROUTE 52

HOPEWELL JUNCTION, NY 12533

EXAMINER

SAM, PHIRIN

ART UNIT

PAPER NUMBER

2661

DATE MAILED: 03/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**Application No. ☒

09/884,214

Applicant(s)

BREZZO ET AL.

Examiner

Phirin Sam

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 19 June 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 June 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**PHIRIN SAM****PRIMARY EXAMINER****Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Objections*

1. Claims 1-27 are objected to because of the following informalities:

**Regarding claim 1**, line 6, “in each said sub-port adapter;” should be rewritten as ---in each said sub-port adapter,---. Line 17, “of a said detected congestion” should be rewritten as ---of said detected congestion---.

**Regarding claim 5**, line 1, “a single said fixed-size packet” should be rewritten as ---a single fixed-size packet---.

**Regarding claim 7**, lines 2-3, “said fixed-size idle packet” should be rewritten as ---a fixed-size idle packet---.

**Regarding claim 10**, line 1, “a switch fabric comprising;” should be rewritten as ---a switch fabric comprising---. Line 5, “in each said sub-port adapter;” should be rewritten as ---in each said sub-port adapter,---. Line 16, “a said detected congestion” should be rewritten as ---said detected congestion---.

**Regarding claim 14**, line 1, “a single said fixed-size packet” should be rewritten as ---a single fixed-size packet---.

**Regarding claim 16**, lines 2-3, “said fixed-size idle packet” should be rewritten as either ---a fixed-size idle packet--- or ---said fixed-size idle packets---.

**Regarding claim 19**, line 7, “in each said sub-port adapter;” should be rewritten as ---in each sub-port adapter,---. Line 18, “a said detected congestion” should be rewritten as ---said detected congestion---.

**Regarding claim 23**, lines 1-2, “a single said fixed-size packet” should be rewritten as ---a single fixed-size packet---

**Regarding claim 25**, lines 2-3, “said fixed-size idle packet” should be rewritten as either ---a fixed-size idle packet--- or ---said fixed-size idle packets---

Claims 2-4, 4, 6, 8, 9, 11-13, 15, 17, 18, 20-22, 24, 26, and 27 are objected to under informalities because they depend on the objected claims.

***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-3, 5, 9-12, 14, 18-21, 23, and 27 are rejected under 35 U.S.C. 102(e) as being anticipated by US Patent 6,735,173 hereinafter referred as “Lenoski”.

Lenoski discloses the invention (**claim 1**) as claimed including a method for enabling a traffic flow control down to all sub-ports (see Fig. 4, col. 11, lines 9-16) of a switching function made of a N-port core switch fabric, said switching function comprising one or more port adapters (see Fig. 4, elements 410a-410p and 401a-401p), each said port adapter including one or more sub-port adapters, said method comprising the steps of:

in each said sub-port adapter,

(a) detecting congestion in an OUT leg of said sub-port adapter (see Fig. 1a, elements 101, 105, and 110, col. 6, lines 16-21). If the congestion is detected at each or more at the line cards,

input or output interfaces, the flow control information will be generated, consumed, or processed and broadcast to other;

(b) reporting said detected congestion through an IN leg of said sub-port adapter (see Fig. 4, col. 11, lines 9-15, 35-37), said step of reporting further including the step of:

(c) piggyback conveying said detected congestion over an incoming traffic entering an input port of said N-port core switching fabric from said IN leg of said sub-port adapter (see Figs. 7B, 8C, and 8D, col. 9, lines 24-32, col. 14, lines 8-35, and col. 15, lines 52-65);

in said N-port core switch fabric:

(d) broadcasting said detected congestion to all output ports (see Figs. 3B, 4, elements 341 and 425, col. 10, lines 13-18, and col. 11, lines 38-45, 49-57);

in each said port adapter,

(e) broadcasting said detected congestion to all sub-ports, thereby informing all said sub-port adapters of a said detected congestion in any one of said OUT leg (see Figs. 4, element 425, col. 11, lines 9-16, 38-45, 49-57).

**Regarding claim 2,** Lenoski discloses the method further comprising the steps of:

(a) in each said sub-port adapter, checking whether said OUT leg of a Nth sub-port adapter is reported to be congested or not (see Fig. 6, col. 13, lines 14-17);

(b) if congested, stop forwarding traffic destined for said OUT leg of said Nth sub-port adapter (see Fig. 6, col. 13, lines 18-22, 28-35), said stopping step further comprising the step of:

(b1) holding traffic in said sub-port adapter if any is received (see Fig. 2B, elements 252 and 262, col. 7, lines 47-55). These queues also temporarily hold the packets when the network switch or other adapters or ports congested;

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- (c) if not congested, continue or resume forwarding traffic, if any received, destined for said OUT leg of said sub-port adapter (see Fig. 6, col. 13, lines 22-25, 40-43);
- (d) continuing to cycle through each reported said sub-port adapter repeating all here above described steps (see Fig. 6, col. 13, lines 36-39).

**Regarding claim 3**, Lenoski discloses the N-port core switch fabric is switching fixed-size packets (see col. 1, lines 24-26).

**Regarding claim 5**, Lenoski discloses more than a single fixed-size packet are moved simultaneously through each port of the N-port core switch fabric (see Fig. 1A, col. 6, lines 14-16).

**Regarding claim 9**, Lenoski disclose the reporting step includes reporting per priority class (see col. 16, lines 43-48).

**Regarding claim 10**, Lenoski discloses a switching system expanding the number of ports of a switch fabric (see Fig. 1A) comprising:

a N-port core switch fabric,

- (a) one or more port adapters, each said port adapter including one or more sub-port adapters (see Fig. 1A, elements 101 and 105, col. 6, lines 1-10);

in each said sub-port adapter,

- (b) means for detecting congestion in an OUT leg of said sub-port adapter (see Figs. 1A, 2C, col. 6, lines 16-21, and col. 8, lines 8, lines 15-20). If the congestion is detected at each or more at the line cards, input or output interfaces, the flow control information will be generated, consumed, or processed and broadcast to other;

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(c) means for reporting said detected congestion through an IN leg of said sub-port adapter (see Fig. 4, col. 11, lines 9-15, 35-37), said reporting means further comprising:

(d) means for piggyback conveying said detected congestion over an incoming traffic entering an input port of said N-port core switching fabric from said IN leg of said sub-port adapter (see Figs. 7B, 8C, and 8D, col. 9, lines 24-32, col. 14, lines 8-35, and col. 15, lines 52-65);

in said N-port core switch fabric:

(e) means for broadcasting said detected congestion to all output ports (see Figs. 3B and 4, elements 341 and 425, col. 10, lines 13-18, and col. 11, lines 38-45, 49-57);

in each said port adapter (see Fig.

(f) means for broadcasting said detected congestion to all sub-ports, thereby informing all said sub-port adapters of a said detected congestion in any one of said OUT leg (see Fig. 4, element 425, col. 11, lines 9-16, 38-45, 49-57).

**Regarding claim 11**, Lenoski discloses the switching system further comprising:

(a) in each said sub-port adapter, means for checking whether said OUT leg of a Nth sub-port adapter is reported to be congested or not (see Fig. 6, col. 13, lines 14-17);

(b) if congested, means for stop forwarding traffic destined for said OUT leg of said Nth sub-port adapter (see Fig. 6, col. 13, lines 18-22, 28-35), said stopping means further comprising the step of:

(b1) means for holding traffic in said sub-port adapter if any is received (see Fig. 2B, elements 252 and 262, col. 7, lines 47-55). These queues also temporarily hold the packets when the network switch or other adapters or ports congested;

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- (c) if not congested, means for continue or resume forwarding traffic, if any received, destined for said OUT leg of said sub-port adapter (see Fig. 6, col. 13, lines 22-25, 40-43);
- (d) means for continuing to cycle through each reported said sub-port adapter repeating all here above described steps (see Fig. 6, col. 13, lines 36-39).

**Regarding claim 12**, Lenoski discloses the N-port core switch fabric is switching fixed-size packets (see col. 1, lines 24-26).

**Regarding claim 14**, Lenoski discloses more than a single fixed-size packet are moved simultaneously through each port of the N-port core switch fabric (see Fig. 1A, col. 6, lines 14-16).

**Regarding claim 18**, Lenoski disclose the reporting means includes reporting per priority class (see col. 16, lines 43-48).

**Regarding claim 19**, Lenoski discloses a program storage device readable by a machine, tangibly embodying a program of instructions executable by the machine (see col. 7, lines 7-22) to perform method steps for enabling a traffic flow control (see col. 7, lines 22-23) down to all sub-ports (see Fig. 4, col. 11, lines 9-16) of a switching function made of a N-port core switch fabric, said switching function comprising one or more port adapters (see Fig. 4, elements 410A-410P and 401A-401P), each said port adapter including one or more sub-port adapters, said method steps comprising:

in each said sub-port adapter,

- (a) detecting congestion in an OUT leg of said sub-port adapter (see Figs. 1A, 2C, col. 6, lines 16-21, and col. 8, lines 8, lines 15-20). If the congestion is detected at each or more at the



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line cards, input or output interfaces, the flow control information will be generated, consumed, or processed and broadcast to other;

(b) reporting said detected congestion through an m leg of said sub-port adapter (see Fig. 4, col. 11, lines 9-15, 35-37), said step of reporting further including the step of:

(c) piggyback conveying said detected congestion over an incoming traffic entering an input port of said N-port core switching fabric from said IN leg of said sub-port adapter (see Figs. 7B, 8C, and 8D, col. 9, lines 24-32, col. 14, lines 8-35, and col. 15, lines 52-65);

in said N-port core switch fabric:

(d) broadcasting said detected congestion to all output ports (see Figs. 3B and 4, elements 341 and 425, col. 10, lines 13-18, and col. 11, lines 38-45, 49-57);

in each said port adapter,

(e) broadcasting said detected congestion to all sub-ports, thereby informing all said sub-port adapters of a said detected congestion in any one of said OUT leg (see Fig. 4, elements 441A, 441F, and 425, col. 11, lines 9-16, 38-45, 49-57).

**Regarding claim 20,** Lenoski discloses the program storage device further comprising the steps of:

(a) in each said sub-port adapter, checking whether said OUT leg of a Nth sub-port adapter is reported to be congested or not (see Fig. 6, col. 13, lines 14-17);

(b) if congested, stop forwarding traffic destined for said OUT leg of said Nth sub-port adapter (see Fig. 6, col. 13, lines 18-22, 28-35), said stopping step further comprising the step of:

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- (b1) holding traffic in said sub-port adapter if any is received (see Fig. 2B, elements 252 and 262, col. 7, lines 47-55). These queues also temporarily hold the packets when the network switch or other adapters or ports congested;
- (c) if not congested, continue or resume forwarding traffic, if any received, destined for said OUT leg of said sub-port adapter (see Fig. 6, col. 13, lines 22-25, 40-43);
- (d) continuing to cycle through each reported said sub-port adapter repeating all here above described steps (see Fig. 6, col. 13, lines 36-39).

**Regarding claim 21**, Lenoski discloses the N-port core switch fabric is switching fixed-size packets (see col. 1, lines 24-26).

**Regarding claim 23**, Lenoski discloses more than a single fixed-size packet are moved simultaneously through each port of the N-port core switch fabric (see Fig. 1A, col. 6, lines 14-16).

**Regarding claim 27**, Lenoski disclose the reporting step includes reporting per priority class (see col. 16, lines 43-48).

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any

evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 4, 6-8, 13, 16, 17, 22, and 24-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 6,735,173 hereinafter referred as "Lenoski" in view of US Patent 6,646,985 hereinafter referred as "Park".

**Regarding claims 4, 7, 13, 16, 22, and 25,** Lenoski discloses all the limitations. On the other hand, Lenoski does not disclose the fixed-size idle packet (cell). However, Park discloses the fixed-size idle packet (see Fig. 2, element 56, abstract, col. 3, lines 20-30, and col. 8, lines 38-41). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the fixed-size idle packet teaching by Park with Lenoski. The motivation for doing so would have been to provide avoid unstable operation that might arise from an excessively fast response to the congestion signal read on col. 3, lines 16-19. Therefore, it would have been obvious to combine Park and Lenoski to obtain the invention as specified in the claims 4, 7, 13, 16, 22, and 25.

**Regarding claims 6, 8, 15, 17, 24, and 26,** Lenoski discloses all the limitations. On the other hand, Lenoski does not disclose the detected congestion is performed in a header field of the fixed-size packets. However, Park discloses the detected congestion is performed in a header field of the fixed-size packets (see Figs. 2 and 3, elements 56 and GFC, col. 8, lines 42-46). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the detected congestion is performed in the header field (GFC) of the fixed-size packets

(cells) teaching by Park with Lenoski. The motivation for doing so would have been to provide to avoid asserting congestion control in response to brief intermittent periods of congestion read on col. 9, lines 51-53. Therefore, it would have been obvious to combine Park and Lenoski to obtain the invention as specified in the claims 6, 8, 15, 17, 24, and 26.

***Conclusion***

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phirin Sam whose telephone number is (571) 272-3082. The examiner can normally be reached on Mon-Fri, 8:00AM - 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chau T Nguyen can be reached on (571) 272 - 3126. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Respectfully submitted,

Date: March 9, 2005

A handwritten signature in dark ink, appearing to read 'Phirin', is written over a horizontal line.

**PHIRIN SAM  
PRIMARY EXAMINER**